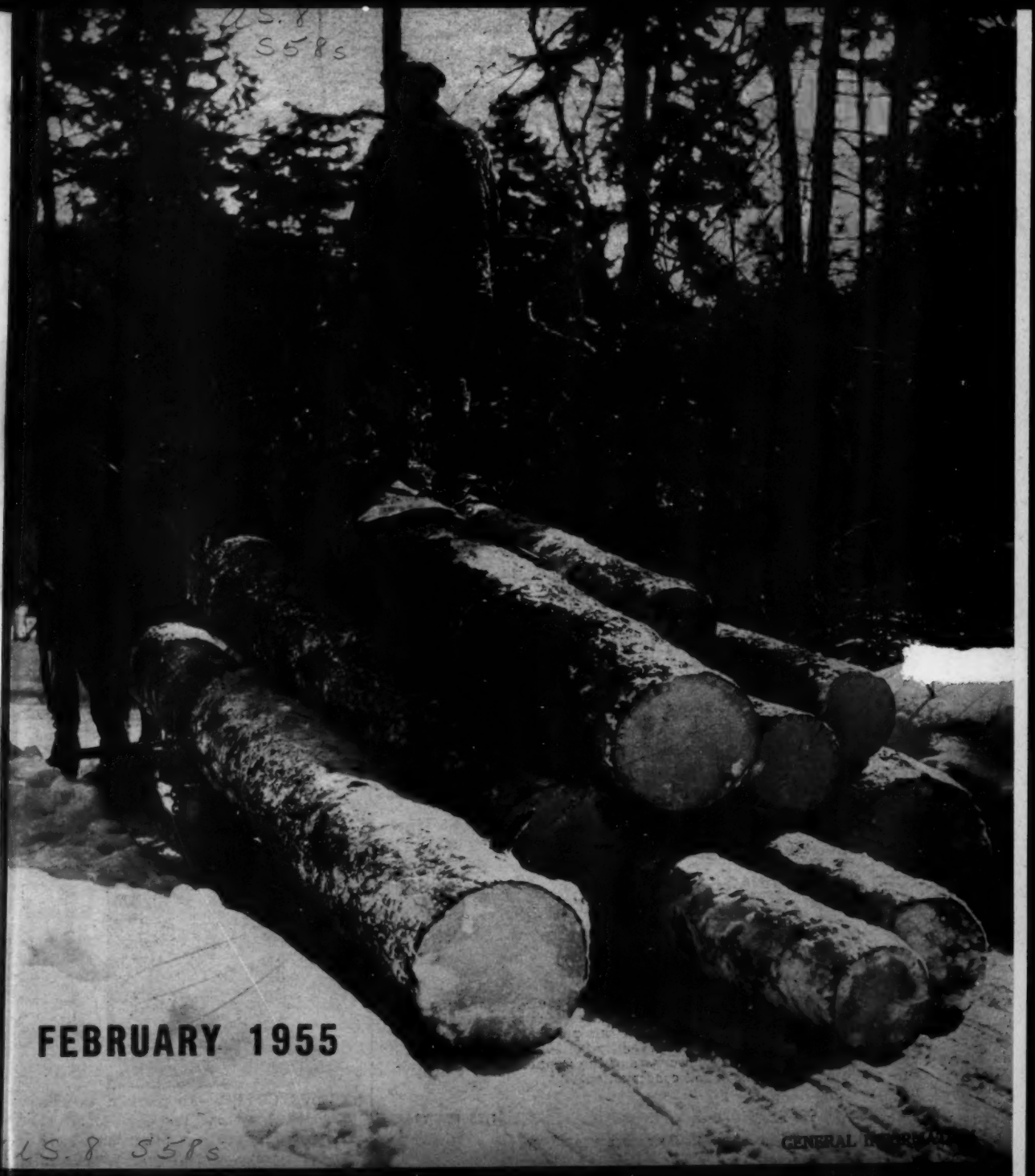

FEBRUARY 1955

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION •

FEBRUARY 1955

VOL. XX—NO. 7

EZRA TAFT BENSON
SECRETARY OF AGRICULTURE

DONALD A. WILLIAMS
ADMINISTRATOR, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

★ THIS MONTH ★

WELLINGTON BRINK
Editor

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication has been approved by the Bureau of the Budget, July 29, 1954. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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MEASURED IN MONEY.—R. H. Blosser found from a survey of 55 farms in Ohio that the net income from soil conservation practices used on Muskingum and associated soils is influenced by (1) disposition of crops, (2) types of livestock and (3) efficiency of forage consuming animals. The summary appears in the recent Research Bulletin 746, Ohio Agricultural Experiment Station.

Costs and return for a group of soil-depleting practices were compared with two different groups of soil-improving practices. Where all crops were sold, net income was $506 for "soil depleting farming" and $1,711 for "soil conservation farming with corn."

When all crops were sold, "conservation farming without corn" gave a net income of $1,057 or $551 more than "soil depleting farming." When forage was fed to dairy cows producing 5,000 pounds of milk for sale, net income was $1,661 for "soil depleting farming" and $2,558 for "conservation farming with corn." When forage was fed to cows producing 5,000 pounds of milk, "conservation farming without corn" gave a net income of $1,905 or $244 more than "soil depleting farming."

When forage was fed to dairy cows producing 9,000 pounds of milk for sale,

(Continued on page 155)

Editors are invited to reprint material originating in this magazine.

FRONT COVER.—Appropriate to this issue is this scene taken in 1938. It shows red spruce logs being hauled out by horse-drawn sled in Vermont's Green Mountain National Forest.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Fifty Years of Forestry Progress

By RICHARD E. McARDLE

Chief, Forest Service

R. E. McArdle.

THIS year, 1955, marks the 50th anniversary of the Forest Service. It was back in 1905 that the Forest Service came into being through reorganization of the old Bureau of Forestry in the Department of Agriculture, and the assignment to it of administration of the forest reserves, which until then had been under jurisdiction of the Department of the Interior.

In the half century since then, forestry has made notable progress. Research and experience have laid a foundation for sound forest management in this country, and forest management has been extended to millions of acres of public and private timberland. This great progress is not the result of Forest Service activity alone. It has resulted from the cooperative effort over the years of many groups and individuals—the Federal and State agencies, the forestry schools, industry, conservation organizations, and thousands of landowners, large and small. Working together, these private and public agencies and individuals have effectively demonstrated the values of organized protection against forest fire, insects, and disease, and of good management and wise use of the Nation's forests and related resources.

Outside the areas of urban development, most of our land falls into one or the other of two broad categories: it is cultivated land, or it is wild land. The cultivated land, the cropland plowed or plowable, amounts to about one-fourth of the total land area in the country. Another one-third of our total land area is forest land. Still another third is natural grassland or range. These wild lands, forest and range, thus comprise some two-thirds of all the land in the United States.

Since ancient times, man has plowed and cultivated the soil to produce crops. He has worked steadily to extend his croplands and make them more productive. For the wild lands, however, usually his only thought was exploitation. He took and used what they had to offer, the wood, the native forage, and other useful materials. Then either he tried to convert the wild land to cropland, or he abandoned it, left it for nature to take care of as she might.

Such was the attitude of the early settlers in this country. Their aim was to push back the forest to make room for more cultivation and settlement. They used the timber wealth they found in the forests, used it abundantly and lavishly and often wastefully. They ran their livestock on the native grasslands, often in such numbers that the forage growth deteriorated and the land began to erode. To very few persons did the thought occur that these wild lands might be so managed that their resources would be regularly and quickly renewed.

I believe the Forest Service's greatest accomplishment in its early days was to get over this idea—that wild land as well as cropland could be managed for continuous production and use—to a substantial segment of the American public. When the Forest Service undertook the administration of the national forests in 1905, it was the first large-scale on-the-ground application of this idea in America.

This was the idea embodied in the word "conservation," which half a century ago took on a new and special meaning, as applied to renewable natural resources.

There had been earlier manifestations of interest in our natural resources. Soon after the Civil War, the spreading areas of cutover land and the great destruction caused by forest fires were causing some far-sighted persons to wonder about future supplies of timber. Some observant individuals were also becoming aware of the value of vegetative cover in protecting the headwaters of streams. A paper by the Reverend Frederick Starr, advocating a program of government-sponsored research on the management of forests, appeared in the report of the Department of Agriculture for 1865. In 1876, governmental forestry work actually got under way, when Congress authorized the Commissioner of Agriculture to appoint "a man of proved attainments" to study and report on the forest situation. In 1891, Congress authorized the establishment of forest reserves within the public domain, although not until several years later was any provision made for the protection and administration of these reserves. Meanwhile a Division of Forestry was established in the Department of Agriculture in 1881. During its first few years it consisted of a Chief and three field agents, whose combined salaries and expenses were covered by an annual appropriation of $10,000. The Division became a Bureau of Forestry in 1901.

The Forest Service came into being as the result of an act of Congress, approved February 1, 1905, which provided for the merger of the division administering the forest reserves in the Interior Department with the Bureau of Forestry in the Department of Agriculture. Theodore Roosevelt, ardent advocate of conservation, was President of the United States at that time. Gifford Pinchot, the first native American to obtain professional training in forestry, was the Forest Service's first Chief. Under the dynamic leadership of "Teddy" and "G.P.," the movement for conservation of natural resources began to make real headway.

At the call of the President, a Conference of Governors was held in 1908. Up to that time, most of the conservation thought and effort had been directed toward the forests. The White House Conference of Governors covered problems of soil, water, and other resources as

A timber survey crew in the Chippewa National Forest, Minn., 1903.

Half a century ago, the National Forests were largely underdeveloped, inaccessible back-country areas. Travel was mostly on horseback; supplies and equipment were transported by pack animals. Here we see some early-day Forest officers in the San Juan National Forest, Colo.

well as those of the forests. In his address to the Conference the President declared that all the various uses of our natural resources "are so closely connected that they should be coordinated, and should be treated as part of one coherent plan and not in haphazard and piecemeal fashion."

The Declaration adopted by the Governors urged "the continuation and extension of forest policies adopted to secure the husbanding and renewal of our diminishing timber supply, the prevention of soil erosion, the protection of headwaters, and the maintenance of the purity and navigability of our streams."

The Conference of Governors set up a National Conservation Commission. It was organized in four sections—water resources, land resources, forests, and minerals. The three-volume report of this Commission issued in 1909, dealt with all these major resources.

Also in 1909, at the President's invitation, a North American Conference on Natural Resources was held in Washington, with representatives from Canada, Newfoundland, Mexico, and the United States attending. Again, this conference gave attention to resource conservation in its broadest aspects.

As a result of these and many other meetings, reports, and actions during the first decade of this century, public interest in conservation increased greatly, and national policies for the conservation of resources began to take shape. All this helped to pave the way not only for the rapid advancement of forestry work but for the development of national programs of soil conservation and other resource conservation that was to take place in subsequent years.

The work of the Forest Service in the past half century has gone forward along three principal lines: administration of the national forests; cooperation in forestry programs with the States and private forest owners; and research.

Establishment of the Federal forest reserves, later to be known as national forests, had begun in 1891. The act of Congress assigning them to the Department of Agriculture in 1905 followed a recommendation by the President that the "forest work of the Government should be concentrated in the Department of Agriculture, where . . . problems relating to growth from the soil are already gathered, and where all the science auxiliary to forestry are at hand

This area in Deschutes National Forest, Oreg., has been logged selectively, to utilize the mature timber and leave younger growth for successive crops.

National forests are supplying more than 5 billion board feet of timber a year to help meet the Nation's need for forest products. All National Forest timber is cut by methods which look to permanent, continuing production. Log hauling here is in the Eldorado National Forest, Calif.

Grazing livestock under permit on National Forest ranges. The Forest Service objective in range management is to keep the grazing in balance with forage growth.

for prompt and effective cooperation." The progress of forestry work in the Department of Agriculture in the years since owes much to this "prompt and effective cooperation" among the Department's agencies.

Secretary of Agriculture James Wilson in 1905 declared that all land in the national forests was to be "devoted to its most productive use, for the permanent good of the whole people." In the administration of these public forests a policy of multiple use has been followed which seeks to maintain a balanced production and use of all the forest resources, and to bring the largest total of returns and benefits in the public interest. In 1905, the national forests were remote back-country areas, largely undeveloped, and with few roads or other facilities for protection and management. Today they are playing a substantial part in the Nation's economy. They are supplying about one-tenth of the country's total yearly output of timber products. They furnish seasonal grazing for some 8 million cattle and sheep. They provide camping, picnicking, hunting, fishing, and other outdoor recreation for millions of people. They protect the sources of water supply for hundreds of cities and towns, for more than 13 million acres of irrigated farmlands, for some 600 hydroelectric power developments, and for thousands of industrial plants.

Forest Service cooperation with the States and with private owners now is carried on in several programs. One cooperative program provides organized protection from fire for State and private forest lands. There is also Federal cooperation with the States in the production and distribution of forest planting stock to landowners. The Forest Service provides subject matter for the extension work in farm forestry conducted by the State extension services with the cooperation of the Extension Service of the Department of Agriculture. The Forest Service also cooperates with the State Foresters in a program to provide on-the-ground technical assistance to owners of private forest land and to processors of primary forest products. In the development and conduct of watershed protection and flood prevention programs the Forest Service, in association with the State Foresters concerned, cooperates with the Soil Conservation Service

in regard to the forestry phases of the programs.

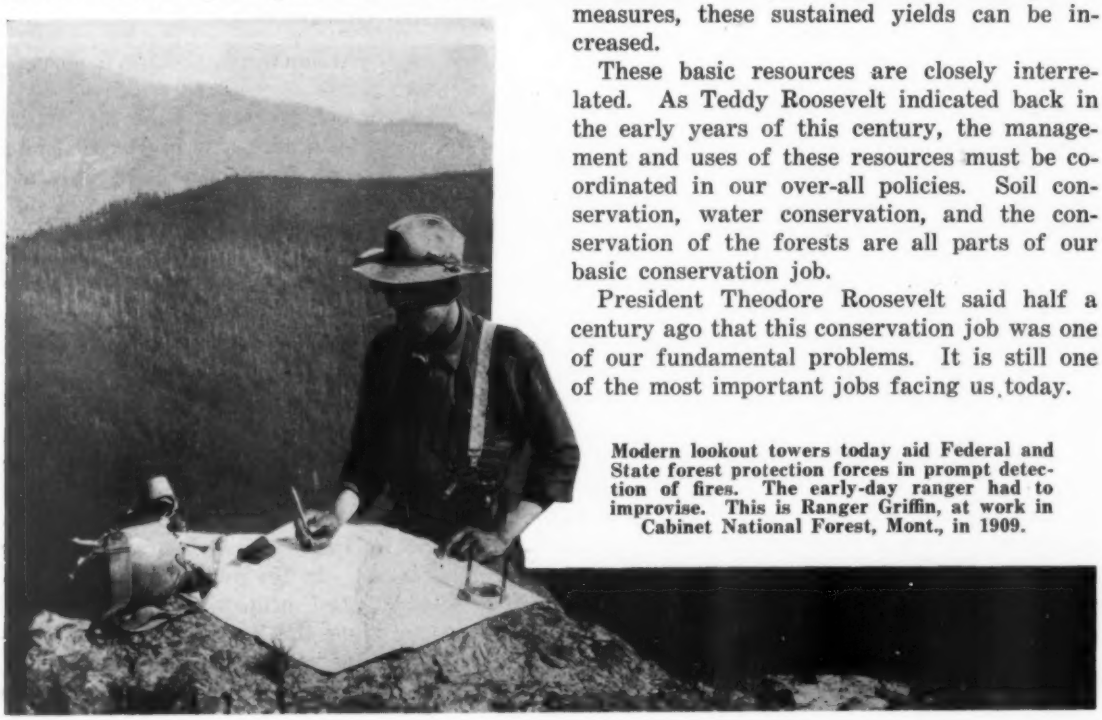
New knowledge developed through research in forest and range management and wood utilization has contributed much to the advance of forestry, both public and private. The Forest Service now maintains nine regional forest and range experiment stations; also forest research units in Puerto Rico and Alaska. The Forest Products Laboratory, maintained by the Forest Service at Madison, Wisconsin, in cooperation with the University of Wisconsin, is one of the world's largest institutions for research in the utilization of wood. Many of the research projects of the regional stations and the Laboratory are conducted with the cooperation of State agencies, industrial concerns, or private associations.

In the past 50 years, forestry has moved forward on a broad front. Along with the development of Federal forest work, there has been a big expansion in the activities of the State forestry departments. Forestry education has made great progress; today more than 30 universities and colleges in the United States are offering full professional courses in forestry. One of the most significant developments during the past half century has been the great advance in private forestry. Fifty years ago, few owners of forest land ever thought of managing their holdings for permanent production. Today large numbers are managing their woodlands for continuing timber crops. These include many of the big lumber and pulp and paper companies with large timberland holdings, as well as many farmers and other owners of smaller woodland properties.

Our pioneer forefathers in this country, when they sought a place to make a farm or to establish a settlement, looked first for dependable supplies of water, for wood to build their homes, and for good soil to grow their crops. Water, wood, and soil are still basic requirements of our economy. They are fundamental natural resources. And they are renewable resources. By wise management and use, the flow of streams and the yield of usable water from our watersheds can be maintained, the productivity of our cropland soils and of our forest and ranges can be permanently sustained. Often, through sound development measures, these sustained yields can be increased.

These basic resources are closely interrelated. As Teddy Roosevelt indicated back in the early years of this century, the management and uses of these resources must be coordinated in our over-all policies. Soil conservation, water conservation, and the conservation of the forests are all parts of our basic conservation job.

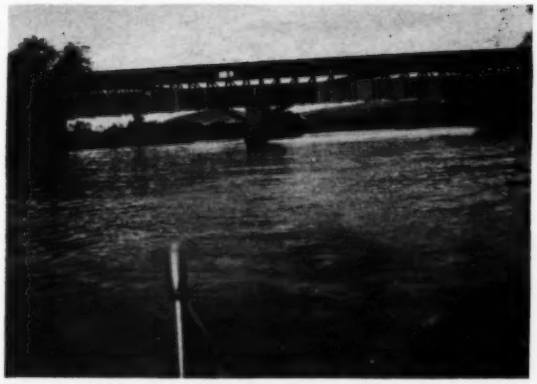
President Theodore Roosevelt said half a century ago that this conservation job was one of our fundamental problems. It is still one of the most important jobs facing us today.



Modern lookout towers today aid Federal and State forest protection forces in prompt detection of fires. The early-day ranger had to improvise. This is Ranger Griffin, at work in Cabinet National Forest, Mont., in 1909.

Vermonters Take Cruise

By SELDEN LEE TINSLEY



There's still much scenic beauty, notwithstanding eroded streambanks. Here one of the boats has just passed under the old covered bridge connecting South Newbury, Vt., with Haverhill, N. H.

OUTBOARD motorboats proved the best vehicles for Vermont's State Soil Conservtion Committee during a recent tour of the Connecticut, mighty main stream for four New England States. Boarding five of the small

"Boat train" in cutoff through Stonecliff farm. A year ago farm machinery was working where these boats are now.

craft, the group got a closeup of streambank problems in an 8-mile stretch between Newbury and Bradford as pointed out by tour guides, Almon Burgess, supervisor of the White River District, and Jack Garey, local Soil Conservation Service technician.

At one location featuring a mile-long oxbow cut by the previous spring's high water, the convoy boated easily over what had once been an excellent piece of farmland. Across the

Note.—The author is soil conservationist, Soil Conservation Service, Burlington, Vt.

Closeup inspection where river undercuts bank until top falls in.

fresh channel, the conservationists saw the resultant island, 20 acres of the best soil in Vermont and now inaccessible for practical purposes.

Comparing another reach with a survey made 25 years before, the committeemen observed that banks had been cut back 200 feet at the point of maximum erosion. Action was seen to be continuing for a quarter of a mile.

Stabilized banks contrasted sharply with the problem areas over much of the route. From the boat, it appeared that most sections could be controlled by removal of large trees, by planting shrubs and protecting the sites from grazing. Riprapping with heavy stone was estimated to be the only remedy for deteriorating, high, steep banks. Costs, the committeemen conjectured, could run $100,000 a mile—too high for the farm pocketbook.

Chairman Paul R. Miller summarized the cruise: "We've seen part of a big problem on which farmers need help. Until such time as public help is available, however, farmers will do well to keep the banks protected from livestock, and to encourage shrubby growth."

DISTRICT PROFILE

PAUL SIMPSON of MICHIGAN

IN the spring of 1925, Paul Simpson and his young wife moved to their 253-acre farm near Leslie, Mich.

One look at the place today is enough to show the rich rewards that good soil conservation and soil building practices have brought in terms of better living.

"When we moved onto this farm," Simpson recalls, "we found most of the soil in a depleted, rundown condition. Very little livestock had been kept on the farm, and timothy hay sold for horse feed had been the chief crop. So far as I know, no lime or fertilizer had ever been applied. Our rye went 8 bushels per acre the first season. The need for lime was evident.

"The first year we bought and spread a railroad carload (50 tons) of ground limestone. The benefits were seen almost immediately.

"Poor drainage was also a serious problem in several of the fields. That same year we bought and installed, with horses and by hand, 2 railroad carloads—2 miles—of tile. Additional tile has been installed since. On wet, heavy land farm drainage is one of the most important and profitable of conservation practices.

"After the lime requirements were met and the drainage improved we started raising sweetclover with each grain crop. The deep roots of the sweetclover improved the soil structure and also aided the drainage."

For years Simpson was aware of the need for a local organization to assist farmers with their soil and water problems. "Local people have the final responsibility for conserving and improving their soil," Simpson reasoned.

He therefore was active in promoting and organizing the Ingham Soil Conservation District which provides an effective mechanism by which the soil conservation program can be locally managed and kept close to local needs. Simpson was elected to the first board of directors and has been an active member of the board ever since. He served as chairman for several years.

Paul Simpson.

In 1946, with the aid of technicians of the soil conservation service, he developed a practical land use plan for the farm. Lawrence Tripp, district farm planner, did much of the work of planning with him.

Simpson follows a 5-year soil-building rotation of corn, oats and 2 years of alfalfa-brome grass, followed by wheat seeded to sweetclover, which serves as a green manure crop.

Oats and wheat are fertilized with 350 to 400 pounds per acre of 5-20-20. For the past 5 years all fertilizer on the oats and wheat has been broadcast just before planting time. Simpson likes this way of applying his fertilizer. "It makes less work and saves time and money," he states.

Corn is fertilized with 200 pounds per acre of 5-20-20 at planting time, in addition to 8 tons of manure per acre. This farmer also

has taken the county agent's advice and is planting his corn thicker now. The results are good. Rye and sweetclover are usually seeded in the cornfields at the last cultivation, to serve as a winter cover crop.

On the one rolling field where erosion is a serious problem all tillage operations are done on the contour. Several water runways have been developed and seeded to a mixture of bromegrass and ryegrass. They are never plowed. These waterways average about 2 rods in width. By following good soil management practices, alone, crop yields have more than doubled, says Simpson.

Odd acres on the farm have been developed for wildlife. Simpson cooperates with the state conservation department to provide better wildlife food and cover. He has started on a woods improvement program in his 16-acre woodlot. He cooperates with the farm forester on this.

Sheep and dairy are big items. At present the Simpsons have 25 pure-bred Holstein milk cows. He has been in the Dairy Herd Improvement Association for 15 years and has built up a herd average of around 400 pounds of butterfat. There are 60 ewes.

Besides his farm work and conservation activities, Simpson finds time to be active in community affairs. He has been treasurer of the Barnes school for the past 20 years, a director of the Leslie Co-op elevator, and a director of the Leslie Artificial Breeders Association for a number of years. He is now a member of the Ingham agriculture committee, and of the Ingham agricultural advisory board. The Simpsons are members of the Leslie Grange and the Leslie Farm Bureau.

There are 3 daughters. Adelaide was graduated from Michigan State College in 1951 with a degree in home economics. She now is employed in Saginaw. Carolyn was graduated from Mason High School in 1950 and is now at home. Their youngest daughter, Barbara, is a senior at Mason High School. All three girls have had 4-H club projects.

SURVEY IN FORMOSA.—The land use capability survey of marginal zones between forest land and cropland in Taiwan, which has been carried out successively in Nantou, Changhua and Taichung during the past year is now moving into another six *hsien* under the sponsorship of the Taiwan Agricultural Research Institute.

Six survey teams have been organized with the cooperation of the Taiwan Forestry Research Institute and the Bureau of General Survey of the Ministry of National Defense to push the new phase of the work.

Work of the present stage is scheduled to be completed by June 1955. A total of 5,200 square kilometers of hilly land in marginal zones in Taitung, Hualien, Miaoli, Yunlin, Criayi and Tainan will be thoroughly surveyed. Maps and reports to be prepared from this survey will serve as very useful reference for planning a program of optimum use and conservation of the land resources of Taiwan.

Following one year's practical work and detailed study, agronomists and foresters on the island have classified all land of Taiwan into the following eight classes: Class I-IV, arable land, suited for cultivation; Class V, marginal land, good for forest and also fit for fruit orchards or pasture; Class VI, not suited for cultivation but good for forest or some kinds of tropical fruit trees; Class VII, fairly good forest land; and Class VIII, only suited for watershed protection or wildlife.

The marginal areas in Nantou, Changhua and Taichung, which were covered in the first and second stages of the survey work, have been tentatively classified according to this system. More than one-half of the land of Nantou and Changhua belongs under Class VII and over two-thirds of the marginal lands in this area are not suited for intermediary crops. Statistical work on the survey of the marginal belt in Taichung, however, is still underway, though the field work in that area has already been completed.

Expenditures required for the present stage of the survey work are estimated at NT $631,000. The whole project will be completed by June 1956.

MEASURED IN MONEY

(Continued from page 146)

net income was $2,813 for "soil depleting farming" and $1,083 for "conservation farming with corn." Where forage was fed to cows producting 9,000 pounds of milk, "conservation farming without corn" produced a net income of $3,833 or $1,020 more than "soil depleting farming."

When forage was fed to beef cattle, net income was $893 for "soil depleting farming" and $1,315 for "conservation farming with corn." When forage was fed to beef cattle, "conservation farming without corn" gave a net income of $482 or $411 less than "soil depleting farming."

IT is in state groups like these that problems are considered which lead to scientific investigations of practical usefulness to conservation farmers.

Each state has its own way of preparing its report on research needs in the field of soil and water conservation. Here are six of the committees that developed 1954 reports, which were transmitted by state and territorial conservationists to the SCS Administrator. The state reports not only served as the basis for the national Soil Conservation Service research-needs report but were sent on in original form to the Agricultural Research Service.

SCS Administrator D. A. Williams in transmitting the reports to ARS emphasized 5 top priority groups of problems: (1) hydrologic; (2) economic aspects of soil and water conservation; (3) basic soil problems; (4) obstacles to range improvement; and (5) problems related to irrigation.

Plans have been made in operations-planning conferences for research-needs reporting in 1955 which will make use of the entire field staff to bring to the attention of state officers those problems on the land for which satisfactory answers are not now available.

FLORIDA: Colin D. Gunn, William H. Fifield, H. G. Clayton.

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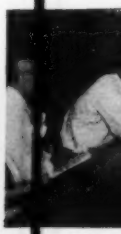
Sperry,



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Starting Points

MONTANA: M. M. Kelso, Ernest H. Sandberg, Arthur H. Post, Ashton Codd, Leonard Yager, Eugene H. Sperry, Clifford Hide, Dave Cawlfield, Farrel A. Branson, Charles J. Whitfield.

MICHIGAN: Ray Lewis Cook, Clarence A. Engberg, Milo Benjamin Tesar, Howard Ream, Harold D. Lakin, Lloyd Mildon Turk, Kenyon Thomas Payne, Ernest H. Kidder, F. W. Trull, C. Raymond Hoglund.

ALABAMA: J. C. Lowery, C. N. Kearley, O. C. Medlock, A. Carnes, Fred Kummer, Coyt Wilson, Lawrence Ennis, R. V. Pearson, Howard Rogers, C. E. Newman, Arnold A. Haugen.

PUERTO RICO: William Gracia, Joaquin Marrero, Glenn Fuller, Jose Vicente-Chandler, Burr E. Davidson.

ARKANSAS: Front—Hollis Williams, Lippert Ellis, C. A. Vines. Back—Hamp Burns, E. D. Butler, D. A. Hinkle, R. M. Marshall, R. Y. Bailey.

An Effective Watershed Program

By HON. EZRA TAFT BENSON
Secretary of Agriculture

I AM grateful for this opportunity to discuss the Nation's small watersheds problem from the Department of Agriculture's standpoint.

And I wish to thank your co-chairman, Raymond A. McConnell, Jr., of Lincoln, Nebraska, personally for inviting me.

Your sponsors' list for this first National Watershed Congress shows many and varied interests. To me this is ample proof that our Nations' water problem is an important segment of our larger problem of the interrelationship of land, water and people.

This Watershed Congress may well prove to be an historic meeting. It reflects the growing public sentiment for Nation-wide action on upstream watershed protection and tributary flood control.

The Secretary.

Thanks to President Eisenhower's personal and official concern, and the action of the 83rd Congress, the Department of Agriculture is for the first time able to deal effectively with the small watershed problem.

It can now begin to assist effectively those people who have a determination to get a job done. It can now assist those people, both technically and to a limited extent financially, to carry out the projects they cannot complete with their own resources.

We now have a means for bringing the water element into balance with the soil element in our national soil and water program. It gives us a new authorization for approaching soil and water problems on a watershed basis. It is a means of accelerating and implementing the soil and water program that has gained so much momentum over the past two decades. As an implementing tool, it offers new opportunities to work on problems that require community action.

For enabling the Department to render this service, I am grateful to Congressman Clifford Hope of Kansas and Senator George D. Aiken of Vermont for their leadership in securing enactment by the Congress of needed Federal legislation. In all fairness, too, I must say that the 1954 legislation was an outgrowth of bipartisan interest of several years' standing. The 1954 Watershed Protection and Flood Prevention Act passed without a dissenting vote.

No one can grow up on a southern Idaho farm, as I did, and be oblivious to the anxieties and heartaches surrounding the problems of water development and management. There, as is many other parts of the irrigated West, the irrigator with his long-handled shovel and rubber boots is almost a trademark.

Note.—The Secretary delivered this address before the National Watershed Congress, Washington, D. C., December 6, 1954.

Still fresh in my memory are the disastrous floods that time and again wrought havoc with the canal systems and buried whole farms under sterile debris.

Nor am I unaware of the suffering and anguish which the last four years of progressive drought have brought farmers and ranchers in the Southeast, parts of the Midwest and southern Great Plains.

There are reasons why I am firmly convinced that our water problem is welded to problems of land and people. Land and water are inseparable in planning and in use. For it is the water which carries away so much of our soil. The water problem is not just one of shortages or floods affecting cities and industries. The problem has its beginnings up on the farms and in the forests of our small watersheds.

The Department of Agriculture has been dealing with the watershed phase of our Nation's flood control problem since 1936. In the Flood Control Act of 1936 Congress determined that floods "constitute a menace to national welfare."

That Act authorized and directed the Secretary of Agriculture to make watershed surveys for flood control purposes in the same localities in which the Corps of Engineers was authorized to make river surveys for flood control.

Significantly, Congressman Hope pointed out two years ago that the Department of Agriculture had not been keeping pace with public interest in the watershed program.

Also recognizing this lag, President Eisenhower, in a mid-1953 message to Congress, stated:

"Our basic problem is to carry forward the tradition of conservation improvement, and wise use and development of our land and water resources—a policy initiated 50 years ago under the leadership of Theodore Roosevelt.

"To do this within the framework of sound fiscal policy and in light of defense needs will require the maximum cooperation among the state and local communities, farmers, businessmen and other private citizens and the Federal Government . . . It will require improved Federal organization to accomplish a more logical division of responsibilities among the various Federal agencies in order that resource development programs may be carried on with the greatest efficiency and the least duplication. And it will require comprehensive river basin planning with the cooperation of state and local interests."

President Eisenhower's message set forth the policy which members of this Administration are carrying out.

In the Department of Agriculture we are determined to assist farmers to carry out a more effective program of soil and water development and wise utilization on a Nationwide basis. This naturally includes protection and development of soil and water resources on individual farms and ranches and also in the small watersheds or subwatersheds.

Everywhere farmers are interested in the

Message from the President

I AM very happy to extend best wishes to all attending the National Watershed Congress.

The proper development and wise use of our water resources requires partnership. The Federal Government must do its part. States, local communities, and private citizens must assume their proper share of leadership and responsibility. I am therefore gratified to know that in this Watershed Congress, citizens of diverse backgrounds have joined together to help carry forward a program of planning and treatment for our Nation's watersheds.

On this initiative and interest, all of you have my congratulations. I hope you will have a most successful meeting.

/s/ DWIGHT D. EISENHOWER

efficient use of water. It is the lifeblood of the West, both for irrigated and dryland farming. And in the East, many farmers could use supplementary irrigation at some time during the growing season.

Showing interest, too, are increasing numbers of businessmen, bankers and other residents of towns harmed by flood from creeks and small tributaries of rivers.

In the upstream watershed development movement farm by farm water development and use is an integral part of the needs of the entire watersheds.

Under the 1954 Watershed Protection and Flood Prevention Act, State governments have a key position in helping local organizations to plan and finance watershed works of improvement.

The Federal Government will provide only such assistance as is needed and feasible to supplement the resources available from local watershed interests and in the State governments.

I wish to emphasize that it is the Department's policy to cooperate with State agencies which have responsibilities in the fields of land and water management. In this way we can assure compliance with State laws and help promote a coordinated effort toward accomplishing the objectives of the Act.

Last spring we had a most effective watershed exhibit in the Department's patio. It attracted widespread attention. It was my pleasure to accompany the President on a tour of the display. We were greatly honored by having Mr. Eisenhower make a special trip to view it. And it gave me personal pleasure to point out what I thought were some startling facts about the watershed and flood prevention problem.

In going over the exhibit, Mr. Eisenhower and I saw that more than half of the Nation's estimated $1.2 billion average annual floodwater and sediment damage occurs on the headwater streams and small tributaries. About seven-tenths of this upstream damage is agricultural, including loss to crops, pasture and damage to farm property, roads, stored crops and livestock.

And in many of the small tributary valleys, three-fourths or more of total flood losses are caused by comparatively small storms—storms which a community can expect once every 10 years or oftener. In many instances the damaging overflows occur once or more a year.

There is also, of course, sediment damage to the Nation's 10,000 storage reservoirs—other than farm ponds—which results mainly from soil erosion on our small watersheds.

Thus we can see readily that small watershed protection is sound and in the Nation's interest. As I said, this Administration has moved up rapidly on the job of getting under way a nationwide, yet locally adapted program of small watershed protection and flood control.

Prior to April 1, 1953, the flood control work of the Department was handled by a land and water resources staff in the Secretary's Office. On that day I abolished that staff and transferred to the Soil Conservation Service the general responsibility for all work under the Flood Control Acts. In doing so we enlisted the nationwide corps of conservation technicians that were dealing every day with problems of water management.

On July 23, 1953, The Congress approved a Conference Report on the Agriculture Department Appropriations Bill which included $5 million for a small watersheds protection pilot program.

The $5 million appropriation enabled the Department, operating through the Soil Conservation Service and the Forest Service, to start a new program of small pilot watershed projects.

One of the objectives of this program was to find the best ways of developing a local-State-Federal partnership in planning and carrying out the watershed protection and flood prevention projects. A second objective was to set up throughout the Nation demonstrations of the benefits derived from such work.

Now in its second year of operations, the pilot program is proving to be just what Congress expected of it—a valuable testing ground. It is showing with increasing clarity how successful watershed projects can be developed by local people with the help of agencies of Government; and also what obstacles to this type of approach exist in some areas.

The 1954 Watershed Protection and Flood

Prevention Act establishes permanent legislative machinery under which the Federal Government can cooperate with local organizations, including the States, in planning and carrying out works of improvement for flood prevention and the agricultural phases of the conservation, development, utilization and disposal of water.

Now for the first time we have truly national recognition by Congressional enactment of the important place of upstream watershed protection in our flood prevention efforts.

The new legislation also authorizes assistance in the agricultural phases of water, such as irrigation and drainage. Thus for the first time the Department is given opportunity to provide kinds of assistance which local organizations have been seeking to help improve water management for agricultural lands.

Public response to the new Watershed Protection Act has been substantial. Up to November 1, Governors of 37 States had provided administrative machinery for carrying out the States' responsibility in reviewing and approving applications from local organizations for Federal assistance.

Applications for assistance on specific watersheds bearing approval of designated state agencies or governors are being transmitted to the Department in substantial numbers.

Two additional new Acts of the last Congress also will help local sponsoring groups as they deal with their watershed problems.

One is the new provision of the amended Water Facilities Act, for making long term direct or insured loans in all States for soil and water conservation practices, irrigation, drainage, establishment of improved pastures and reforestation on farms.

I find great interest in this expanded source of credit. Many farmers and ranchers in the eastern areas of the country who have a dependable and adequate water supply are applying for loans through the Farmers Home Administration for supplemental irrigation. Other farmers have obtained loans to deepen wells or otherwise improve water supplies for their homes and livestock. Indications are now that farmers will make widespread use of this credit for soil conservation practices and pasture improvement.

We are pleased and grateful for the wholehearted participation of commercial banks and other lending institutions in the insured features of this loan program. It provides assurance that loan funds will be available this year for eligible farmers and ranchers.

Another authorization of potentially far-reaching effect in speeding up needed treatment of watershed lands is the provision in the revised 1954 internal revenue laws. This provision enables farmers and ranchers to treat expenditures for a number of soil and water conservation measures as current expenses that may be deducted from farm income for tax purposes.

Our pioneering work with watershed management and improvement naturally is guided and supported by much research that the Department, state argicultural experiment stations, and other state and federal agencies have accumulated over the years in dealing with the country's water problem.

The hydrologic research carried on in experimental watersheds as well as in the laboratories has been most helpful. So has the long-time research of the Department in other fields of water management, including irrigation and drainage.

But the need for more research in this field of water management is readily apparent. If more facts were available, I'm sure that we would witness less controversy among flood control interests.

While we do not have all the research we need, we do have enough to know that a combination of both upstream land treatment and works of improvement and downstream works of improvement is necessary.

The Department is convinced that upstream watershed protection programs are complementary to and not a substitute for needed downstream improvements. At the same time, it is equally obvious that downstream river improvements cannot be a substitute for upstream watershed protection.

I feel that Congressman Hope oriented the Watershed Protection and Flood Prevention Act rather well when he said: "It bridges the gap between our soil and water conservation programs, and our programs for development and flood protection in our major river valleys,

and greatly enhances ultimate benefits of both."

President Eisenhower acted with wisdom in this matter in appointing a Cabinet Committee on Water Resources on May 26, 1954. Chairman of our Cabinet Committee is Secretary of Interior McKay, with the Secretary of Defense Wilson, Secretary of Commerce Weeks, Secretary of Health, Education and Welfare Mrs. Hobby, and myself as the other members.

Our job thus far has been to review all the factors and forces that must be taken into account in the establishment of a Nationwide water policy and program. This is a beginning to more actively assist in the coordination of activities of the various government agencies in the field of water and to give consideration to national water resources legislation.

We are fortunate that we are entering the expanded watershed protection phases of the Nation's conservation program with a background of solid experience to draw upon. The principles embodied in the watershed legislation extend the basic concept of soil conservation districts; namely, the preeminence of local initiative and responsibility, with teamwork between local, state and federal agencies and involving federal technical and financial help only when local people request it.

The watershed approach, utilizing the new authorities available, simply provides the mechanism through which most of the land and water problems of a watershed can be solved by the local people living in that watershed. The new watershed protection program clearly should not be looked upon as some miracle coming out of the Federal Treasury. If it is successful, it will be because local people, working through their local organizations with the help of their State Governments, are determined to assume and maintain the principal initiative and bear a major share of the cost of the job, seeking from the Federal Government only that additional assistance which is beyond their technical and financial capabilities. We cannot separate people and program in this important work.

The new program is another link between science and the welfare of the people. The watershed approach makes it more essential than ever for the farmer to invest in his soil as if it were a bank for storing up fertility and managing his grass and woodlots to sustain or improve their yields.

The Department of Agriculture is wholeheartedly moving ahead with increased tempo in the field of watershed protection and flood prevention.

With the wholehearted cooperation of all concerned and the blessings of a kind Providence we shall succeed.

ALLEN TO PURDUE.—Durward L. Allen, formerly acting chief of the Branch of Wildlife Research, U. S. Fish and Wildlife Service, has been added to the staff of the Department of Forestry and Conservation, Purdue University. He will be associate professor of wildlife management in the School of Agriculture and in the Agricultural Experiment Station.

HOW TO RECHARGE.—Desilting, and treating of the recharge area by the addition of organic matter is the most effective method used for recharging ground water supplies according to George A. Whetstone. By using cotton-gin waste, infiltration rates of several times those of undisturbed soil have been obtained. Whetstone makes this observation in a recent issue of *Agricultural Engineering*.

Our Number 1 job right now is to drive ahead with the conservation planning and treatment of every possible acre of our productive agricultural land, district by district, watershed by watershed, and farm by farm. Although the *water* problems of any given watershed are the key to its qualifying under the small-watershed program, it would be hard to overemphasize the importance of *land use*. Moving ahead with land treatment on individual farms is a primary consideration anywhere. Even where supplemental flood-prevention structures are necessary, agronomic, woodland and other measures on the watershed above them are of first importance in guaranteeing their efficiency and long life.

—D. A. WILLIAMS, Administrator
Soil Conservation Service

Water Loans

R. B. McLeaish.

TO reemphasize their mutual desire for effective teamwork, the Administrators of the Farmers Home Administration and the Soil Conservation Service have joined in a memorandum prompted by recent amendments to the Water Facilities Act.

These amendments extended the authority to make water facilities loans to all states and territories. They also authorized the FHA to make sound loans to eligible farmers, ranchers, and associations who are unable to obtain the credit they need from other sources, specifically for the purpose of applying soil and water conservation practices.

"The basic objectives of soil and water conservation loans that can be made by the FHA under this new authority," says the memorandum issued by R. B. McLeaish, and D. A. Williams, "are to encourage and facilitate the improvement, protection, and proper use of farmland by providing adequate financing for soil conservation, water development, water conservation and use, forestation, drainage of farmland, the establishment and improvement of permanent pasture, and other related measures. The achievement of these objectives should assist farmers in making needed land use adjustments, in bringing about desirable uses of acres diverted from the production of surplus crops, and in meeting the impact of adverse weather conditions on their farming operations. Similar opportunities to adopt soil and water conservation practices are afforded to farmers who obtain farm ownership loans under the authority of the Bankhead-Jones Farm Tenant Act.

D. A. Williams.

"It is the policy of the SCS to cooperate with the FHA in the widespread use of these authorities. When requested to do so by the FHA, local SCS offices will review the technical phases of material in loan applications of soil conservation district cooperators concerning soils information and engineering design and layout. Upon request by such applicants for loans for soil and water conservation purposes, the SCS will, within its available resources and consistent with other commitments, assist in the preparation of plans and designs and will supervise the installation of approved practices and measures.

"Soil conservation district supervisors should be encouraged to give high priority to requests for technical help by FHA loan applicants. In areas outside soil conservation districts, state offices of each agency may work out mutually acceptable arrangements for providing some degree of technical service to farmers who apply for loans for soil and water conservation purposes. However, it must be kept in mind that funds available to the SCS for technical assistance are justified to the Appropriation Committees specifically for assistance to soil conservation districts. Each FHA loan applicant requesting technical assistance from SCS should be advised of the opportunity and advantages of becoming a cooperator of a soil conservation district.

"We believe it is highly important that soil and water conservation measures planned and applied under FHA loan authorities meet technical standards that will insure the greatest possible benefit to farmers and ranchers and that will protect and improve the resources involved. This can best be accomplished by the use or development of a conservation plan for the entire farm unit. However, if warranted by existing conditions, the State Conservationist may arrange for the technical assistance to be limited to the improvements to be financed with the FHA loan."

Two Districts Grow Own Trees

By R. J. AMSTERBURG, Jr.

Irrigation system at tree nursery near Walhalla.

WITH the growing need for a supply of young pine seedlings constantly staring them in the face, the directors of the Manistee County and Mason County (Mich.) Soil Conservation Districts decided to investigate the possibility of setting up a cooperative district nursery which would furnish a constant supply of locally grown trees for reforestation in the soil conservation districts. This would end the problem of trying to obtain trees from other sources and having them shipped long distances to cooperators.

Note.—The author is work unit conservationist, Soil Conservation Service, Traverse City, Mich.

R. J. Amsterburg and D. Spuller inspect seedlings.

In the fall of 1953 the nursery committee was formed. The committee was composed of Dwight Spuller and Franklin Houk of the Mason County District, and George Meister and Forrest Chrestensen of the Manistee County District. William Brozzo and Robert Amsterburg, of the Soil Conservation Service, were brought in as technical advisors.

District directors at nursery for work bee.

A site that was suitable for the nursery was obtained through the cooperation of the U. S. Forest Service. It was located at the old CCC campsite near Walhalla in Mason County. The two districts held a work bee to get the site ready. A 4-inch well was drilled and the water situation was answered. The water was to be supplied to the seedbeds through an irrigation system.

In May of 1954 the beds were laid out and seeded to red pine, Scotch pine, Austrian pine, jack pine and Norway spruce. Approximately one and one-half million young trees were seeded.

This operation was successful and the young seedlings approached the damping off period. If they could survive this, then the nursery would be on its way. They came through in excellent shape with very little damping off, and with the addition of water in the dry periods they began to make excellent progress.

The nursery, nestled among the trees in a clearing in the forest, is now a green velvet mass of young seedlings as they prepare to go

through their first winter. They will be blanketed with a light covering of straw to protect them against the freezing and thawing which tends to heave them out of the ground and expose the roots.

Looking back over the first season of the new nursery, the directors of the two districts view their accomplishments with satisfaction, for here is a local problem being met on a local basis. You might call it a form of "tree roots democracy" instead of the often mentioned "grass roots democracy."

Midkiff Favors Grass

By VIRGIL S. BECK

"ABOUT half the cultivated land in southeast Colorado should be put back to grass, and most of the remainder planted to feed crops instead of wheat," declares Sam Midkiff, who is ranching and farming on 5,000 acres of land 3 miles north of Firstview, Colo.

"At times I think the best thing to do would be to sell my tractor and plow, scatter grass seed over the plowed land, and go to Florida for about 3 years. Maybe the land then would go back to grass and we wouldn't have dust storms every time the wind blows."

Despite his disgust with 4 years of drought which have created a serious wind erosion problem in his part of Colorado, Midkiff believes that the solution to dust lies in the widespread use of soil and water conservation practices.

Midkiff is secretary of the Cheyenne Soil Conservation District. He moved here from Texas in 1945. He already was experienced in conservation, having been a cooperator of the Martin-Howard Soil Conservation District near Big Spring, Tex.

Midkiff has a herd of 150 Herefords, of which 35 are registered. His permanent plan provides for 100 grade cows, 25 replacement heifers, and 25 registered cows. He has been getting a 90-percent calf crop from his cows, but the heifers haven't done so well. His steer calves sell at around 470 pounds, and the heifers at about 430 pounds.

Midkiff rotates grazing of pastures, and feeds 2 pounds of cottonseed cake to each cow daily during the winter. He plans to creep feed his calves this summer.

Water is a problem here. It is difficult to get a good well on much of Midkiff's land, so he has to haul water to some of his cattle on the range in order to utilize the grass.

Midkiff thinks it is too risky to grow wheat

Contour listing on this terraced field checked soil blowing.

where there is danger of soil blowing. He had 640 acres in wheat in 1952 and 1953. In the fall of 1953, he planted wheat and row crops in a stripcrop pattern, the strips being 16½ feet wide.

Midkiff plans to regrass 200 acres which he broke out in 1948. He made a good feed crop on this land in 1949, but the drought started then, so crops have failed 4 years straight. He will seed the 200 acres to a mixture of crested wheatgrass, blue grama, side-oats grama and clover next fall.

"I'm convinced that conservation farming will bring good crops if we work at it hard enough," Midkiff declares. "However, there are too many farmers who don't pay enough attention to their land. They run out from town now and then, do a little something, and then hurry back. This kind of farming isn't helping to solve our soil blowing problem."

Church and Soil

(From a sermon by Gordon Thorpe, Student Pastor, Zion Lutheran Church, Minot, N. Dak.)

THREE considerations make it inevitable that the Christian Church must concern itself with conservation.

The first of these is that God made everything good.

It is a distinctly Christian and Biblical viewpoint to consider the world and the things in it as good rather than evil. Most Greek philosophy, which incidently colors most of our western world's thought, considers matter and things as evil. Many other religions look on the human body and the world as bad or sinful. To them the only hope of man is to escape the world to enter the realm of the spirit, which alone is good. But the Bible says, that God looked at everything He had made, and behold, "it was very good." "The earth is the Lord's, and the fulness thereof, The world and they that dwell therein." (Ps. 24:1) The world, the soil, the land is good. God made it that way. We should think of it in that way. We should keep it that way.

The second consideration is that man has been placed as a steward over what God has made.

The Bible places great emphasis upon good stewardship. Unjust, unfaithful and poor stewards are condemned again and again in scripture. God has made us stewards over the things He has made. In Genesis 1:26 God said, "Let us make man in our own image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth." When God created Eden He placed the first man and woman in the garden to till it and keep it. Man still holds the world in trust. Man is a steward of all which God has made.

The third consideration which makes it inevitable that the church be concerned with conservation is that God is intimately concerned with man's material welfare.

When God placed man on the earth, He did not throw him completely on his own. God continues to watch over His children. "God makes His sun rise on the evil and on the good, and sends rain on the just and on the unjust." (Matt. 5:45) In the text from which I read, God shows His concern for His people's material welfare. The people in question were being led captive to a strange land. God told them that they should build houses, plant gardens, and seek the welfare of the city to which they were going. God is eternally concerned with the material welfare of the human race.

As far as I know, true Christianity has never sought to save a man's soul while letting his body rot. Real Christianity looks on man as having a body *and* a soul, *both* of which are important to God. That is why Christian missionaries carry not only Bibles, but bring with them also spades, medicine, teachers, clothing, tractors and bulldozers.

It is not necessary for me to point out how directly man's material welfare is bound to the soil. You know that when our soil is gone, so is our material security. And God is profoundly interested in Man's material welfare.

These three theological considerations make it imperative that the Christian church concern itself with conservation.

Flanking trophy: Freeman B. Decker, superintendent, Nebraska Department of Public Instruction, and recipient George E. Rotter, supervisor of conservation education.

TROPHY FOR EDUCATION.—George E. Rotter, editor and supervisor of conservation education for the State department of public instruction was the most recent winner of the Nebraska Conservation Trophy.

Dr. H. B. Kennedy, donor of the award, said the recognition goes annually, "to that Nebraskan who did most toward propagating and conserving fish and wildlife or improving relations between landowners and sportsmen or increasing co-operation among outdoorsmen themselves or educating our citizenry, particularly the youth, to practice conservation of all our natural resources."

Three of the six winners thus far have been in the field of conservation education.

REVIEWS

THE CLIMATIC ATLAS OF THE UNITED STATES. By Stephen S. Visher. 403 pp. Illustrated. 1954. Massachusetts: Harvard University Press, Cambridge 38. $9.

THIS book is, as Prof. Brooks notes in the foreword, "the first book on the climates of the United States since 'Climate and Man' . . . published in 1941." The Atlas contains over 1,000 maps and diagrams portraying vividly the major elements of climate. Of these, about 40 deal with one phase or another of precipitation, including a series on "excessive" rains, their seasons of occurrence as well as frequency.

In addition to Part V on precipitation, Part I on temperature is also comprehensive. Part II deals with winds, atmospheric pressure, and storms; Part III sunshine; and Part IV atmospheric humidity and evaporation.

An interesting group of figures deals with "Some Consequences of Climate on Land and Water—Soil Erosion, Topography, Lakes and Rivers." Another group is made up of 23 maps on climatic changes, a subject pertinent to our growing concern about our national water supply.

The individual U. S. maps are only about 3" x 5" in size and the author has been forced to generalize. To obtain a national view of our climatic patterns, these are perhaps quite adequate, though for local use more detail is needed.

—GEORGE W. MUSGRAVE

THE FORD 1955 ALMANAC. Edited by John Strohm. 208 pp. Illustrated. 1954. New York: Simon and Schuster. $1.

AGRICULTURAL information for the man of the soil, from suburban gardener to big-time farmer, is packed in the 1955 Ford Almanac now on sale at book and magazine stores. The 208-page book, sponsored by Ford Motor Company, is a new version of the 1954 edition.

Well illustrated, the Almanac is filled with scientific information on soils, livestock, fertilizers, crops, farm machines and a wealth of how-to-do-it features.

One feature is an enlarged section on "Farming Around the World," which draws heavily from information gleaned by Editor John Strohm during his 1954 tour of Great Britain and Western Europe.

Strohm, born on an Illinois farm, is an associate editor of Country Gentleman, past president of American Agricultural Editors Association and a consultant to the Secretary of Agriculture. He has visited more than 65 countries in his search for the latest agricultural information.

A forest-protected watershed: the timbered slopes of the St. Joe River drainage in St. Joe National Forest, Idaho. (See the article, "Fifty Years of Forestry Progress," in this issue.)